

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5

DATE: March 29, 1995

SUBJECT: Soil Lead Clean-up at the NL/Taracorp Site,
Granite City, ILFROM: Pat Van Leeuwen, Toxicologist
Region 5TO: Bruce Means, Acting Chief
Toxics Integration Branch

This memorandum provides some additional follow-up on the teleconference between Region 5 and TIB on Monday to discuss EPA's policy on soil lead clean-up at CERCLA sites, as outlined in the July 14, 1994 OSWER Directive # 9355.4-12.

Region 5 understands TIB's concerns following some earlier discussions with the region. We believe that much of that concern stems from confusion related to the language used in the discussion - principally, the statement that "paint was not considered in setting the soil lead clean-up level" during the recent reexamination of the remedy for the NL/Taracorp site, Granite City, IL. I hope that this information provides some further clarification of this issue.

* When we say that "paint was not considered in setting the soil lead clean-up level", we mean that only the lead contribution from soil was used in the reexamination of the soil lead clean-up level. A portion of the lead in household dust, attributed to other sources, was subtracted from the total indoor dust exposure. A calculation of the risk attributable to soil, which includes a consideration of the total indoor dust exposure (assumption that the lead paint contribution is part of the background exposure) will likely result in a more stringent soil lead clean-up level.

* It was anticipated that houses identified for soil lead clean-up would be further evaluated for other sources of lead exposure by the Illinois Department of Public Health (IDPH). My understanding is that Dave Webb of the Edwardsville office has conducted an inspection of the first batch of remediated residences near the smelter, and he did not identify any significant paint exposure. In those residences with soil lead concentration at or near the 500 ppm clean-up level (homes



further from the smelter), the paint exposure may be more important.

* The Proposed Plan for the on-site slag pile, released in February, 1995, includes a provision to make HEPA vacuum(s) available to residents for use in indoor house cleaning.

* An extensive database, which would allow a more indepth evaluation, is not available; the Remedial Investigation report for the site was prepared in 1988. The ROD on this site was signed in 1990. No further RI/FS work was been conducted by EPA or the PRPs since 1989. Extensive collection of house dust and paint data was not required at that time. Some limited data is available from a blood lead study conducted by ATSDR in 1991. Region 5 has been unable to obtain the complete data set from this study, and has used what information has been released by the IDPH in the EPA reevaluation.

* Because Granite City is part of a large urban area consisting of numerous communities with very old housing stock, inclusion of a PRP-funded paint remediation strategy in only a part of Granite City and Madison may create serious community relations and environmental justice problems. Granite City is a predominantly white community and has a higher mean income than East St. Louis, which is predominantly black. Some children in East St. Louis have elevated blood leads; the primary source of lead exposure is probably paint.

* When EPA agreed to reexamine the soil lead cleanup level, it was not anticipated that an analysis of the impact on the soil clean-up level when the paint contribution is considered (the attributable risk calculation) would be undertaken since "EPA" has no authority to remediate paint under Superfund. Region 5 felt that the proposed cleanup level was "protective" since it can achieve a significant risk reduction in those areas where the soil contribution to the exposure is likely to be the prominent lead exposure, and the remediated properties would receive some further evaluation for additional sources of exposure. If we now consider the paint contribution in the calculation, the soil cleanup level will undoubtedly be lower.

* The teleconference earlier this week identified additional risk management issues which will not be discussed here.

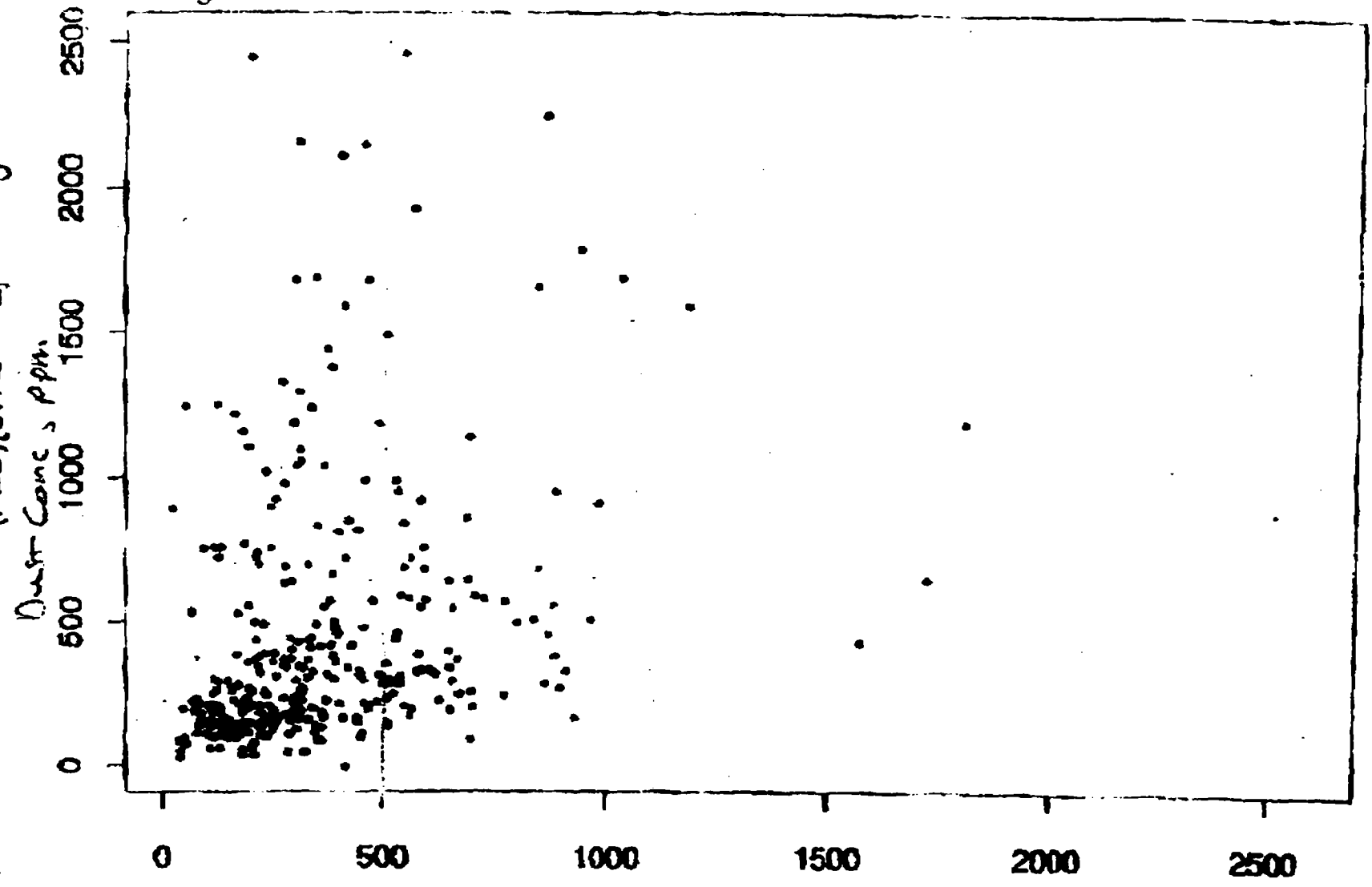
Some policy issues which may require more clarification from TIB are should the new OSWER directive have any impact on signed RODs, what sort of additional data collection should be included for new lead sites, should the soil lead clean-up level include a quantitative analysis of attributable risk and what sort of adjustments should be made to the remedy when environmental justice considerations are included.

TABLE 30
SENSITIVITY ANALYSES FOR SOIL LEAD CLEANUP LEVELS

SOIL CONTRIBUTION TO HOUSE DUST	SOIL LEAD CLEAN-UP CONCENTRATION (ppm)
0.70 (default)	340
0.55	370
0.46	420
0.29	480

Graham City
(PBD)(SITE == 2)

Figure 1



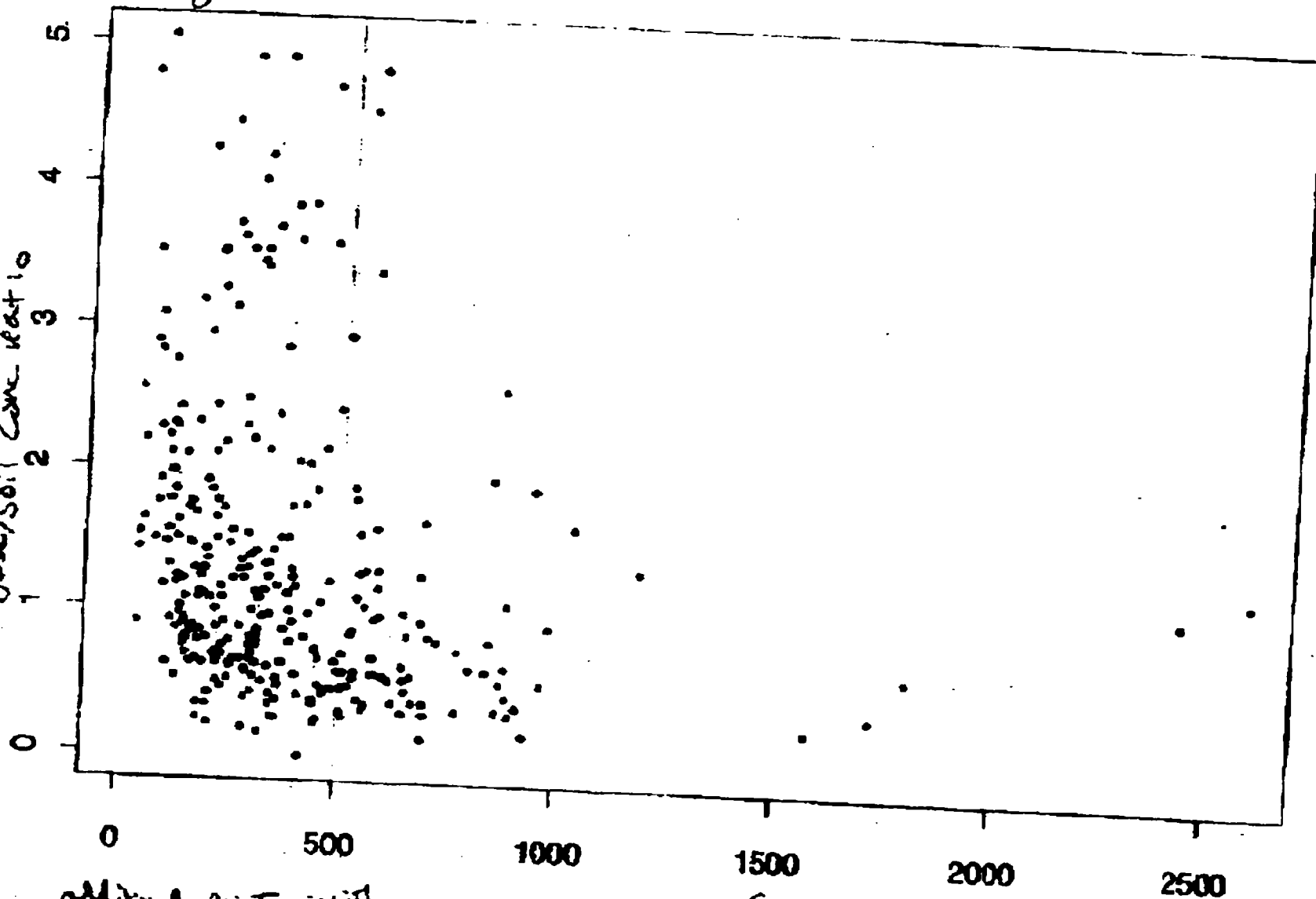
Additional data points with
high dust conc. are off scale

PBS(SITE = 2)
Soil Conc., ppm)

(PBD/PBS)(SITE == 2)

Dust/Soil Conc Ratio

Figure 2



additional points with
high dust/soil ratio are off scale

PBS[SITE == 2] Soil Conc, Ppm

* * Prepared for Attorney Work Product * *

Note to: Pat Van Leeuwen

From: Paul White

Subject: Approaches to consideration of lead paint in deriving soil lead cleanup levels

The IEUBK model can be applied to derive a soil cleanup level without consideration of exposures that result from the contribution of lead based paint to household dust. This approach generally proceeds as follows:

- (1) Establish appropriate model parameters for the soil plus dust ingestion rate, the mass contribution of soil to indoor dust, and the bioavailability of soil and dust. The model defaults were selected to be appropriate typical values in the absence of good site specific data.
- (2) Assume that all dust lead is derived from soil according to the dust to soil ratio.
- (3) National background levels of lead in air, water, and diet would typically be assumed; site data would be applicable if available.
- (4) Establish a goal for health protection. For this discussion, it is assumed that the goal is that a child living on soil that is not remediated would have no more than a 5% chance of exceeding 10 ug/dL blood lead.
- (5) Run the IEUBK model iteratively to determine the soil concentration that would cause a risk equal to the protection standard (5% risk of being above 10 ug/dL). This soil concentration is then the cleanup goal.

This approach is protective in the sense that a child exposed to soil concentrations at or below the cleanup goal, and who had only background levels of lead exposure from other sources (no lead paint exposure) would not exceed the stated risk level.

However, if a child lived on soil containing lead at the cleanup goal, and if that child also had exposures lead in dust contributed by lead paint, then that child would have a risk level above the health goal (more than 5% probability of exceeding 10 ug/dL). In fact, the risk attributable to soil will generally exceed 5% when paint related exposures are present. Attributable risk is the amount by which risk increases when soil lead exposures are added on top of other non-soil related lead exposures. Attributable risk is calculated by ascertaining the risk level including both soil and non-soil exposures, then subtracting out any risk that might occur due to non-soil related exposures alone.

This understanding leads to an alternate approach to the determination of a soil clean up goal that considers lead paint exposure.

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To: Pat Van Leeuwen		From: Paul White	
cc: Region 5		cc: EAC	
Dept: J		Phone: 202 260 2589	
Fax: 313-486 0753		Fax: 202 260 1722	

(1) Establish appropriate model parameters for the soil plus dust ingestion rate, the mass contribution of soil to indoor dust, and the bioavailability of soil and dust. The model defaults were selected to be appropriate typical values in the absence of good site specific data.

(2) Estimate dust concentration as the sum of a lead paint contribution and a soil contribution. This requires, additionally, estimation of a lead level in house dust due to the presence of lead paint. I would recommend that a typical value for a lead paint to dust contribution for the housing stock in a neighborhood be selected, rather than an attempt to make this evaluation on a house specific basis. Single measurements of dust concentration for specific homes will probably be too variable to allow reliable house specific soil cleanup levels to be established. Also, house specific cleanup levels are likely unless equity concerns and be impractical in a remediation program. In order to avoid consideration of a worst case scenario, and in order to generate the most plausible risk estimates, I would consider omitting houses with badly deteriorating lead paint from consideration when a paint to dust contribution is estimated.

(3) National background levels of lead in air, water, and diet would typically be assumed; site data would be applicable if available.

(4) Establish a goal for health protection. For this discussion, it is assumed that the goal is that a child living on soil that is not remediated would have an attributable risk due to soil of no more than a 5% chance of exceeding 10 ug/dL blood lead.

(5) Run the IEUBK model to determine the risk attributable for specified soil concentrations. The attributable risk will be equal to the risk of exceeding 10 ug/dL including all sources of lead exposure minus any risk that remains when soil exposures are removed from the calculation. Iterative model runs are performed to determine the soil concentration that produces an attributable risk of 5% of exceeding 10 ug/dL. This soil concentration is then the cleanup goal.

This soil clean up level is then interpreted as the level of lead that may be present in soil without increasing a child's chances of exceeding 10 ug/dL by more than 5%, taking into account background sources of lead exposure, including contributions of lead based paint to house dust. Note that this calculation assumes that a child does not eat paint chips, but rather that only indirect exposures to lead based paint occur, through a contribution of paint to household dust lead levels.

Note that this second approach will generally produce lower cleanup goals than the first approach which excluded consideration of a paint contribution to house dust. It would, presumably, be to the advantage of responsible parties to take actions that permanently reduce the lead paint contribution to dust as this would then generally allow higher soil lead cleanup goals under this approach.